A Novel Approach to Synthesize Sounds of Some Indian Musical Instruments using DWT

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Abstract

In this paper a novel algorithm based on Discrete Wavelet Transform (DWT) approach has been applied to synthesize the sounds produced by a few traditional Indian musical instruments, viz. flute, shehnai and sitar. In this algorithm, the level of decomposition of wavelets is varied till the error norm between the original signal and that generated through DWT is below a desired level. It is observed that when the wavelet decomposition level is varied, the energy retained in wavelet coefficients varies with the type of the wavelet and its decomposition level. It is further observed that the maximum level of decomposition for the three sound signals is different and the signals are also reconstructed with the wavelet coefficients only up-to the maximum level of decomposition with lesser number of samples. The quality of sound as obtained through this algorithm is perceptually close to original sound signal.

References

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